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School of Information Science and
School of Public Health
Master of Science in Health Informatics

Project Work:

IMPROVING DATA QUALITY AND INFORMATION USE IN MATERNAL
AND CHILD HEALTH DEPARTMENTS OF HEALTH CENTERS: THE CASE
OF DESSIE CITY ADMINISTRATION, SOUTH WOLLO, AMHARA REGION

BY
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DECLARATION

By my signature below, I declare and confirm as this project is my original work. I have followed all the ethical principles of scholarship during the baseline assessment, interventions and reviewing post interventions improvements of this project. This project work is submitted in partial fulfillment of the requirements for the Master of Science degree from school of graduate studies at Addis Ababa University. I seriously declare that this project work has not been submitted to any other institution anywhere for the award of any academic degree, diploma and certificate.

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DEDICATION

This work is dedicated to my beloved husband Ato Yaregal Alene whose encouragement and support gave me strength to successfully finish this course. I would also like to dedicate this paper to my daughters Engineer Abigeya Yaregal and Doctor Tewobesteya Yaregal who didn't have their Mothers follow-up during my study.

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Table of Contents

Contents	Page
ACKNOWLEDGEMENT	i
TABLE OF CONTENTS.....	ii
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ACRONOMYS AND ABBREVIATION	viii
ABSTRACT.....	ix
CHAPTER ONE	1
INTRODUCTION	1
1.1Background	1
1.2 Statement of the problem	3
1.3 Objectives.....	5
1.3.1 General Objective	5
1.3.2. Specific Objective.....	5
1.4 Scope and Limitation of the Project.....	5
1.4.1 Scope of the project	5
1.4.2. Limitation of the project	6
1.5Significance of the Study	6
CHAPTER TWO	7
LITERATURE REVIEW	7
2.1. General Literature	7
2.1.1. Definition and Concepts of HMIS.....	7
2.1.1.1. Routine Administrative Report (RAR).....	7

2.1.1.2. Information Use	8
2.1.1.3. Quality of Data	8
2.1.2 HMIS Data Quality Assurance Framework.....	9
2.2. Review of Related Works	11
CHAPTER THREE	17
METHODOLOGY	17
3.1 Study Area.....	17
3.2 Study Design	17
3.3 Source and Study Population	17
3.4 Sample size.....	18
3.5. Study period	18
3.6 Data Collection Instrument	18
3.7 Data Entry and Analysis.....	20
3.8 Quality Assurance	20
3.9 Ethical Consideration	20
3.10. Dissemination of Results.....	21
3.11. Operational Definitions	21
CHAPTER FOUR.....	24
RESULTS AND DISCUSSION	24
4.1 Description of the Pre-intervention assessment	24
4.2 Pre-intervention Assessment Result.....	24
4.2.1 HMIS Data Quality.....	24
4.2.1.1 HMIS Data Accuracy at Health Centers.....	24
4.2.1.2 HMIS Report source document availability	27

4.2.1.3 HMIS Report data Completeness at health centers	27
4.2.1.4 Timeliness of indicators on source document	28
4.2.2. Determinants of HMIS Performance	29
4.2.2.1 M&E Structure, Functions and Capabilities.....	29
4.2.2.2 Data-Collection and Reporting Forms, Tools and Guidelines	31
4.2.2.3 Data Management Processes	34
4.2.2.4 Information Use	37
4.2.3 Data Management and Reporting System Performance.....	38
4.3 Interventional Activities.....	40
4.3.1 Presentation of Pre intervention findings and discussion with Project Participants on identified weakness.....	40
4.3.2. On the Job Training	40
4.3.3 Organizing HMIS Performance Monitoring Team	41
4.3.4 Monthly performance Review Meeting.....	42
4.3.5 Supportive supervision	42
4.3.6 Supply Data Collection Tools/Forms and Service Card.....	43
4.3.7 Data Audit.....	43
4.3.8 System identification of lost follows up and avoids parallel reporting	43
4.4. Post-interventions assessment results.....	43
4.4.1 HMIS data accuracy at health centers	43
4.4.2 HMIS sources document availability	44
4.4.3. HMIS report completeness at health facilities after intervention	44
4.4.4 Timeliness of HMIS reporting.....	45
4.4.5. M&E Structure, Functions and Capabilities after Intervention	45
4.4.5.1 Data Display	45

4.4.5.2 Establishment of Performance Monitoring Team	45
4.4.5.3 On the Job Training	45
4.4.6 Data-collection and Reporting Forms, Tools and Guidelines after Intervention	46
4.4.6.1 Data collection and reporting forms/tools	46
4.4.6.2 Supportive Supervision.....	46
4.4.7 Data Management after Intervention.....	46
4.4.7.1 All tally sheets are available and collects regular basis after filled.....	46
4.4.7.2 Data Quality Check	47
4.4.7.3 Availability of Reports	47
4.4.8 Information use after intervention	48
4.4.9 Data management and reporting System Performance after intervention.....	48
4.5 DISCUSSION	50
CHAPTER FIVE:	53
CONCLUSION AND RECOMMENDATION.....	53
5.1 Conclusion.....	53
5.2 Recommendations	54
6. References.....	55
7. Annex.....	i

LIST OF TABLES

Table 1 Routine HMIS data accuracy by the indicator types	25
Table 2: Summary of M&E Structure, Functions and Capabilities Performance of health facilities visited during the assessment period, Dessie, January 2017	31
Table 3: Summary of Data Collection and Reporting Forms, Tools, and Guidelines Performance of Health Facilities Visited During the Assessment Period. Dessie, January 2017	33
Table 4: summary of data management performance of health facilities visited during the assessment period, Dessie, January 2017	35
Table 5: Summary of Information use Performance of Health Facilities Visited During the Assessment Period. Dessie, January 2017	38
Table 6. Below shows the routine HMIS data accuracy by the indicator after intervention	44
Table 7: Data management and reporting System Performance health centers, Dessie, April, 2017 after intervention	48
Table 8: Summary of Dimensions of the HMIS Data Quality before and after Intervention	49
Table 9: Summary of Data management and Reporting System Performance before and after intervention with score b/n zero and three.	49

LIST OF FIGURES

Figure 1: Data managements and reporting systems, functional levels and data quality [16].....	10
Figure 2.Data accuracy at service delivery point by indicators, Dessie, January 2017.	26
Figure 3. Data accuracy health facilities wise Dessie January, 2017	26
Figure 4: Source document completeness at service delivery points by indicators, Dessie, January, 2017	28
Figure 5: Graph of Data Management and Reporting System Performance at Service Delivery Site, Dessie, January 2017.	39
Figure 6: Data Management and Reporting System Performance at Service Delivery Site, Dessie, January, 2017.	39
Figure 7 availability of reports after intervention	47

LIST OF ACRONOMYS AND ABBREVIATION

ANC	Antenatal Care
ART	Anti-Retroviral Therapy
CAR	Contraceptive Acceptance Rate
DPT3	Diphtheria, Pertussis and Tetanus
DQA	Data Quality Assurance
DM	Data Management
EPI	Expanded program Immunization
EFY	Ethiopia Fiscal Year
FP	Family planning
GAVI	Global Alliance for Vaccines and Immunization
HC	Health Center
HIS	Health Information System
HMIS	Health Management Information System
ICT	Information Communication Technology
IS	Information System
LQAS	Lots Quality Assurance sample
MCH	Maternal and child health
MDG	Millennium Development Goal
M&E	Monitoring and Evaluation
MNCH	Maternal, New Born and Child Health
MPI	Master Patient Index
MR	Medical Record
M&E	Monitoring and Evaluation
Penta 3	Pentavalent 3
PMTCT	Prevention of Mother to child Transmission
PNC	Postnatal care
SBA	Deliveries attended by Skilled Birth Attendant
WHO	World Health Organization

ABSTRACT

Background:- Effective Health Management Information System (HMIS) is essential for setting priority for community based problems, for allocation of budget and human resource and usage of health data that assist decision makers and stakeholders manage and plan resources at every level of health service. In Africa, including Ethiopia there are many problems in data management in the health sector in relation to missing of data in reports this leads to a picture which could not represent the country health information.

Objective: - To assess and improve HMIS data quality and information use in maternal and child health departments of health centers in Dessie City Administration.

Methodology: Pre and post interventional cross sectional descriptive study design was employed using both quantitative and qualitative approaches. The project was carried out in the MCH departments all eight fully functional health centers found in Dessie City Administration. World Health Organization (WHO) data quality assessment (DQA) tool was adopted which included data management, reporting system assessment and data verification. Semi-structured interview guide was also used to identify factors influencing data quality and information use. The assessment involved interview of responsible person, source document review and on-site observation. The study was based on eight key MNCH indicators and considered the second quarter data starting from October to December 2016. Based on the pre-assessment finding, the following interventions were carried out: on-job training; strengthening performance monitoring team, mentoring, fulfilling data collection tools/forms, and data audit.

RESULT: - The result of the project showed that proportion of HMIS data accuracy has been increased from about 83 % before to 97 % after intervention which was compared with the Ethiopian National HSDP IV target which was 90%. Similarly, availability of all indicators source documents increases from 87% to 100%. Of the available indicator source documents level of HMIS data completeness has been increased from about 86% before to 98 % after intervention. However, timeliness ranges from 83 % to 100%. Regarding data management and reporting system, these four areas were in turn weighted based on composite sub components

and are scored between zero and three, with 2.5 - 3.0 indicating full system strength, 1.5 – 2.49 indicating partial strength and less than 1.5 indicating no use system in place. Accordingly after intervention data management and reporting system components complete system strength was documented. M&E structure, function and capabilities scored about from 2.4 to 2.9; use of standard data collection and reporting tools and guidelines scored from 2.2 to 2.8; data management process from 2.3 to 2.5 and information use 1.4 to 2.7 at all service delivery points. Lack of continuous training, lack of supportive supervision, lack of HMIS material supply, low management support and lack of feedback were identified as the contributing factors for the minimum use of HMIS information in the department.

CONCLUSION:-For improving HMIS data quality and information use practice in maternal and child health departments;. Simple, strategic and practical interventional activities were carried out throughout the project. The interventional activities of this project on HMIS data quality and information use practice more or less increased the data management and reporting system, the accuracy, completeness and timeliness of HMIS data reporting that paved the way for continuous information use in Health Centers.

RECOMMENDATION:-The health centers management should flow the annual plan to the department and individual level and perform routine performance monitoring per the schedule according to the plan and the health centers employ similar intervention mechanism for the other departments.

CHAPTER ONE

INTRODUCTION

1.1Background

Effective Health Management Information System (HMIS) is essential for setting priority for community based problems, for allocation of budget and human resource and usage of health data that assist decision makers and stakeholders manage and plan resources at every level of health service. In Africa including Ethiopia there are many problems in data management in the health sector in relation to missing of data in reports this leads to a picture which could not represent the country health information [1].

In an effort to strengthen the country health information system; Ethiopia has undertaken an extensive reform and re-design of the health management information systems. The reform has taken major steps in response to the lack of accurate, timely and complete data that consequently affected the quality of care, planning and management systems as well as the decision making by the managers at all levels in the health care systems through the realization of the principles of HMIS. The main aim has been to ensure better measurement, through strengthening health information and data management systems that is standardized and that ensures better data – better decision –better health systems performance and improved health status [2].

To this effect, Ethiopia started implementation of the newly designed HMIS in all regions. The basis has been to ensure that the country will have timely, reliable and accessible quality health service data for informed decision making in order to maximize utilization of scarce resources in the health sector [3].

It is to be emphasized that the quality of reported data and use of information for action is dependent on the underlying data management and reporting; stronger systems should produce better quality data. Information System is a set of interrelated elements or components that collect(input), manipulate(processes), and disseminate (output) data and information and provide a feedback mechanism to meet an objective [4].

In Dessie City Administration health centers data management system for data transmission of monthly reports is as following: started from Health Post to Health Centers, Health Centers to Woreda Health Office, Woreda Health Office to Zonal Health District, Zonal Health District to Regional Health Bureau and Regional Health Bureau to Federal Ministry of Health at the highest level to which data are reported.

Therefore, further assessment exploring the data quality, assess the system that produces data and use of HMIS data for decision making in health care is necessary to aid successful future improvement and implementation of effective HMIS scale up and to share experience for the rest of the health facilities by identifying prevailing strengths and weaknesses.

This project thus intends to document the changes that include 1) the data management and reporting systems, 2) verification of reported data for key indicators for selected sites and 3) level of Information use at all health centers.

1.2 Statement of the problem

The assessment of HMIS system indicted that the system was characterized by lack of accurate, timely and complete report; consequently affecting effective management and decision-making by the managers at all levels. On the other hand HMIS is expected to produce relevant, timely, accurate and complete health information for health program managers, providers and stakeholders to support decision making that helps in improving the health service and health status[5]

Inaccurate, untimely, incomplete and inconsistent data are common challenges in planning, monitoring and evaluation of health sector performance in many sub-Saharan African settings including Ethiopia [6].

Now days due attention has been given for improving performance of health services delivery and its management information system which is widely seen to be attributed to better performed HMIS process at each level of health system. Despite the potential of HMIS process in supporting strategic planning, efficient allocation of scarce resources and effective targeting of intervention to those in greatest need leading to better health outcome, countries with the highest burden of illness and with the urgent needs for proper generation and use of evidence have the weakest HMIS process and performance in the vast majority of world's poorest countries [7].

Key problems of Health Management Information System (HMIS) process in four countries (Lesotho, Mauritius, Sudan and Tanzania) were the fragmented nature of responsibility for data and disease-focused demands by different vertical programs and donors which result in: unprocessed health data; or if processed, unanalyzed; if analyzed, not read; if read, not acted upon. Only a little proportion of health information affects decision-making particularly at districts and health facility level [8].

In spite of Dessie City Administration Health Centers are having HMIS implementation; Nevertheless, it is difficult to ensure these health institutions have put into practice all the basic principles of HMIS (standardization, integration, Simplification and Institutionalization).These

institutions fulfill the required infrastructure but it is not easy to make certain that the HMIS bring about the expected outcomes in terms of data quality (timeliness, completeness and data accuracy) and local use of information for service delivery improvement in MCH department[1

Therefore this project intends to improve the HMIS performance including data quality and information use through building capacity of health care providers and mentoring the performance.

1.3 Objectives

1.3.1 General Objective

The overall objective of this project is to improve HMIS data quality and information use in the MCH department of health centers in Dessie City Administration.

1.3.2. Specific Objective

- ❖ To do a baseline assessment on the level of data quality in relation to completeness, timeliness and accuracy; and information use of MCH departments at the health center levels ; in Dessie city Administration.
- ❖ To assess data management and reporting systems performance.
- ❖ To identify possible factors affecting data quality and information use from health care providers perspective.
- ❖ To implement an intervention and follow the implementation process.
- ❖ To evaluate the progress and effect of the intervention on quality of data and information use.

1.4 Scope and Limitation of the Project

1.4.1 Scope of the project

This project was carried out in only MCH departments of selected health centers. The project was also looked in to only on this. The project was only assess the three attributes of data quality namely completeness, timeliness and accuracy. The assessment was focus on the routine data collection instruments, registers, forms and reporting systems and also information flow in MCH department. In addition, the project was identify the issues from provider side on data collection, recording, compilation, management; use of HMIS generated information for health care planning and decision making at department level.

1.4.2. Limitation of the project

This project had various limitations. These were:

- ❖ There was no enough literatures and project done especially lack of project intervention done on local areas.
- ❖ Workload and lack of interest the staff to spend their time on the project's aim to create awareness on data quality and information use and to discuss on solutions for effective intervention.
- ❖ Availability of limited literatures: The most of all was lack of similar project work in the area made it difficult to compare the achievement made.

1.5Significance of the Study

It contributes to the maternal and child health department by enabling the health care professionals to adapt a culture of information use in accomplishing the daily activities to maximize the effectiveness and efficiency of the work.

It can also serve as a good starting point to initiate further data quality and information use improvement in the other departments of the health centers. Finally, this project can also be used as baseline for interested individuals who want to evaluate the project against this finding.

Therefore, the project on HMIS data quality and information usage improvement is very significant for improving HMIS information use in internal management, improving HMIS information quality to support improved health management and to enhance credibility in reporting to external agencies in order to direct toward improve performance and remove obstacles in the Dessie City Administrative Health Centers which has primary responsibility for operational management.

CHAPTER TWO

LITERATURE REVIEW

2.1. General Literature

2.1.1. Definition and Concepts of HMIS

Health Management Information System: -is an integral component of any healthcare System that allows for the collection, storage, compilation, transmission, analysis and usage of health data that assist decision makers and stakeholders manage and plan resources at every level of health service. HMIS data can be used to determine disease patterns or to track health services use, as well as to monitor and evaluate health service delivery. The purpose of HMIS is to routinely generate quality health information and use that information for management decisions to improve the performance of health services delivery [11].

Information systems are increasingly important for measuring and improving the quality, use and coverage of health services. There is a global shift from curative to preventive care, from hospital care to community health care, from centralized to decentralized health care, from a specific project approach to a comprehensive approach. The restructuring of HMIS has become an important trend in the whole developing world since the adoption of primary health care as a global strategy for achieving ‘health for all’ goal [12].

2.1.1.1. Routine Administrative Report (RAR)

In Ethiopia patient cards and registers are planned to capture all patient related data, reports based on the 122 sector wide indicators that have been jointly agreed and approved by the Government. The necessary resources was allocated to put in place the human resources, tools and the equipment needed for the proper documentation, compilation, analysis, use and timely reporting of routine facility data as per the standard. All stakeholders operating in the health sector should support and use HMIS for program monitoring. Each health facility and administrative level was put in place the necessary institutional mechanisms as per the standard indicated in the new design of HMIS. Data is collected from health facilities from client-patient

records. The data was aggregated and analyzed to compare plan versus performance for the facility's own consumption. Facilities were supply data to the relevant administrative levels through the routine HMIS reporting period. confirmation of the data is done through Performance monitoring, surveys and regular inspections [13].

2.1.1.2. Information Use

Since the health sector is more information driven service, Information quality is often associated with the use of the Information Systems. Health information is consist of varying types of information that include administrative information needed to manage the complex business of health care and clinical information based on patient related data found in patient records. This information gives detail characteristics of the patient, their illness and their healthcare plans. Healthcare professionals need to share and exchange information about the care of their patients. Information of high quality allows the healthcare team to respond to unexpected changes in the patient's condition [14].

The health management use information system, which is vital at each level of the health service. Availability of reliable, relevant, complete and timely health information is usually recognized and expressed as an essential foundation for any public health interventions, including maternal and child health care activities. Several factors influence use of information for action. The major factors that affect information use include the characteristics of the data quality in terms of relevance, reliability, and timeliness; characteristics of the required decision and communication gap between data people and decision-makers; and lack of supportive super vision, lack of training and lack of performance monitoring team. In addition, use of information at the site where it is collected aid health care professional and managers to monitor their performance [15].

2.1.1.3. Quality of Data

Data quality is a multidimensional concept; including aspects of accuracy, consistency, completeness, availability and timeliness. The efforts to improve quality of health information systems in developing countries including Ethiopia had been done so that health workers could

collect accurate, consistent, and complete data which would be processed and transmitted on time [16].

Low quality data results poor performance monitoring. Therefore, there is a need to measure the quality of data generated.

Data quality can be measured using the following attributes.

- ❖ Accuracy: collected information is accurate and consistent.
- ❖ Integrity: The structure of data and relationships among units and attributes maintained consistently.
- ❖ Consistency: data elements are consistently defined and understood.
- ❖ Completeness: all the required information of a given record should be filled.
- ❖ Validity: Do data values fall within acceptable ranges defined by the health organization?
- ❖ Timeliness: Is data available when needed?
- ❖ Accessibility: Is the data easily accessible, understandable, and usable?

The first five attributes generally pertain to the content and structure of data, and cover a multitude of problem that we most commonly associate with poor quality data: data entry errors, arithmetic errors, duplicate records and missing sources documents or incorrect data values [16].

2.1.2 HMIS Data Quality Assurance Framework

The data quality audit tool is a conceptual framework developed by WHO which defines the different components of the health management information system (HMIS) and their relationship to produce improved quality data and continuous use of information, leading to better health system performance and better health outcomes. Data quality assessment tool is a common approach for assessing and improving the current status of the functioning of the HMIS and its ability to provide quality monitoring and data to decision makers. The quality of reported

data and use of information for action is dependent on the underlying data management and reporting systems; stronger systems should produce better quality data. For good quality data to be produced by and flow through a data management system, key functional components need to be in place at all levels of the system [16].

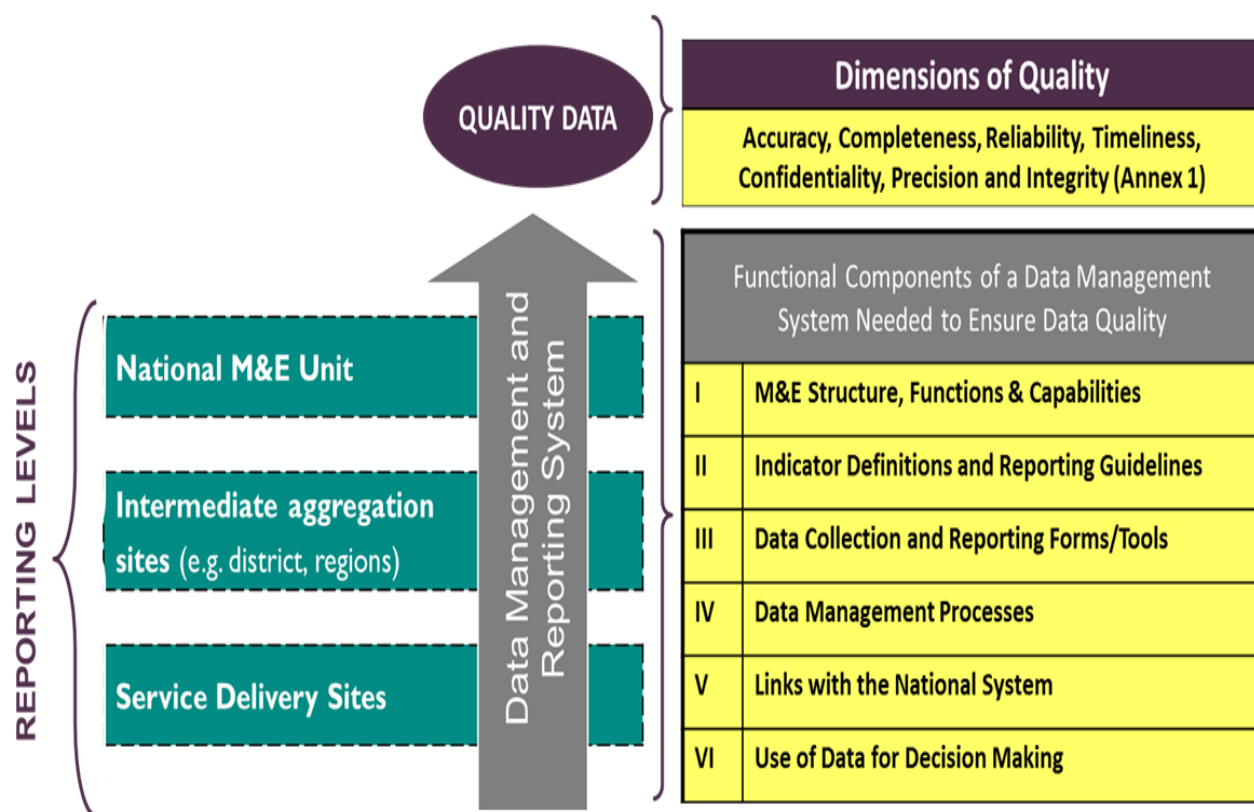


Figure 1: Data managements and reporting systems, functional levels and data quality [16].

Data quality assessment tool is a common approach for assessing and improving overall data quality. It is a single tool helps to ensure that standards are coordinated and allows for joint implementation between partners and with National Programs. The four functional Components of the data management and reporting systems are M&E structures, functions and capabilities including trainings; Data-collection and reporting forms, tools and guidelines; Data management process and Information use for decision making.

- ❖ *M&E Structures, Function and Capabilities:* The M&E structures function and capability including training is one of the functional areas to assess system and can be clarified as

factors that data management staff members identified with a clearly assigned role and responsibility and received the required training in accomplishing routine HMIS tasks.

- ❖ *Data-collection and Reporting Forms, Tools and guidelines:* The data collection, reporting forms, tools and guidelines were also another functional area to assess the systems through by assessing availability of standard data collection tools and reporting forms that are systematically used throughout the M&E data management system to measure relevant indicators and data are maintained in accordance with a written policy.
- ❖ *Data Management Process:* Data management process also another functional area to assess data management and reporting system performance by identifying data quality challenges and mechanism in place for addressing them by assessing documentation processes like collection, aggregation and manipulation.
- ❖ *Information Use:* Use of information for planning and decision making for improving the program quality at the health facilities [17].

2.2. Review of Related Works

Various studies shown that, in most developing countries routine HMIS produce low quality data and use of information for planning and decision making is weak. Currently a baseline for routine HMIS performance available in many countries showed that data quality ranged between 34% and 72%; and use of information between 30% and 53%. This is due to lack of standardization of HMIS data management processes as well as the absence of an information culture [18].

The assessment done March, 2012 by Gebrekidan, Negus and Hajira on data quality and information use showed that culture of using information for decision-making in planning and management of implementing programs was observed and only 37% of the facilities exercised discussion and made decisions using findings from routine health information. The supervision and feedback from senior levels was also inadequate to address the problems of late, incomplete reporting and inaccurate reporting. These findings indicate the extent to which data quality can be adversely affected by limited investment in infrastructure and human resource capacity as

well as by the performance of the data aggregation and reporting units of the system. The assessment also show that there was an assigned HMIS focal person at 25 (78%) health facilities with 7 (28%) of the HMIS focal persons having information technology training. In addition, regular budget allocation for HMIS running costs were found at 7 (22%) of the health facilities. Regarding to data management and reporting system. Significant system weakness were detected in all components, M&E structure, function score 1.4, Data collection and reporting forms/tools score 1.5, links with national reporting systems score 1.3, and information use score 0.7[19].

Evaluation of the effect of an intervention to improve the data quality on PMTCT in KwaZulu-Natal, South Africa showed that overall data completeness and data accuracy improved from 26% to 64%, and 37% to 65% respectively when carefully assessed before and after implementation of intervention with the same tool[3].

A country wide hospital quality improvement project done in 14 selected Hospitals by Yale University, Clinton Health Access Initiative and FMOH reported that the major problems for low data quality were staff morale; shortage of financial resources, medical equipment, drugs and other supplies; limited opportunities for staff training; poor infection control and a lack of community participation in hospital governance. After one year intensive intervention on identified and prioritized problems post implementation assessment indicated that 45 of the 75 (60%) selected key management indicators showed improvement in the domains of human resources, medical records, nursing standards and practice, infection prevention and control, quality management and financial management; although improvements were not uniform across all hospitals and across all indicators[20].

The report done on utilization of HMIS at district level on HIV/AIDS program in North Gondar showed that, among 84.3% data collected daily only 22.5% of them utilized. Also out of 45 units of HIV/AIDS in the study area, only 17.7% changed their data into information at District and facility level and utilized it for immediate decision making. From the whole study units only 13.2% appropriately documented their reports and registration books in the year 2005 to 2006. In the first quarter of 2006 about 34.7% of the study units were supervised once and 12.2% of them had given feedbacks [21].

Assessment of immunization data quality from routine reports conducted in Mozambique showed that numbers of all vaccine types were different in three sets of data when comparing tally sheets, with facility registers and district reports. The vaccines reported by the health facilities showed an increase averaging 7% for all vaccine types compared to the tally sheets. Differences were also seen between the reported figures on all vaccine types by health facility when compared to District reports [22].

A facility based cross sectional study was conducted in Ayder referral and teaching hospital, Mekele, Ethiopia. Data consistency between register and the tally sheets was measured as 72.2% and there was 78.6% average report completeness measure in the HMIS unit. Use of accurate data in the facility was low this could be due to lack of consecutive training to increase awareness and also staffs do not want to spent time in counting data every month even to follow every HMIS disease classification. In addition, information was not still used for action since there was no well established information-use culture in the facility. This might be mostly due to lack of knowledge on how to use HMIS data for allocation of resource and man power and also lack of strict supervision and follow up from the regional health bureau might be another reason [1].

Another facility based cross sectional study was conducted in all the 9 regions and two city administrations, among all the system components relative strength was documented in linkage with the national system and use of standard data collection and reporting tools and guidelines at all levels scored 2.1. The study also showed that the M&E structure was not organized and resources were found to be very limited at Service delivery point's scored 1.9 and 1.4 respectively. In addition information uses were found to be low across all regions (Scored 1.7). Regarding data verification, the level of data accuracy was low in the service delivery point compared to others at all levels, in addition to this over and under reporting in all indicators were found to be predominant in SDPs and regions respectively. The main aim of strengthening the system components is to establish information use culture at all levels especially at peripheral ones, but, this study revealed that, information use was the lowest scored component as compared to others at all levels at Service delivery point, District, Zonal and Regional level respectively [5].

A study conducted on utilization of health information system at district level in Jimma zone stated that the overall utilization of information in the study area was about 32.9%. In this study it was found that 8(26.7%), 57(31.3%) and 54(36.0%) units/or departments of Health Posts, Health Centers and District Offices respectively tried to change data into information, while cumulatively, (32.9%) units/departments of health facilities used their data/information for decision making, planning, budget and M&E of their activities. The assessment also showed that Availability of resources: 85% of the facilities surveyed have computers, printers and calculators while 40% have regular telephone line and internet. Access to an electricity and water supply is very high (89.2%). The study confirmed that poorly coordinated processes, no capacity building activities on HMIS and absence of supplies like guidelines. Data production, documentation and transfer were not fully supported by information technologies [23].

The assessment done on challenges of routine health system data management on prevention of mother to child transmission of HIV/AIDS in South Africa showed that major problems occurred both in the completeness and accuracy of data. The study showed that across all six data elements, the District Health Information System value deviated on average by 75.2% from the corresponding values found in the clinics' registers and there was large discrepancy in the completeness of data reporting for each data element. It also indicated that the accuracy of all selected data elements from 316 sites reported over 12 months to the District health information system were complete only 50.3%[24].

HMIS process and its performance

HMIS process

Assessment undertaken at Guanajuato State in January 2010 also indicated the Routine Health Information System process in terms of *Data collection*, *Data quality check*, *Data completeness*, *Data transmission*, *Data analysis*, *Data display*, *Feedback* as follow:

Data collection: 51% of the facilities reported having a data collection procedures manual.

Data quality check: 40% of the facilities reported having a mechanism for checking data quality.

Data completeness: 40.1% of the facilities reported having a process for checking data completeness.

Data transmission: 48.8% of the facilities showed meeting all criteria for data transmission process.

Data analysis: 60.4% of facilities perform data analysis, but with less emphasis on comparisons among types of services.

Data display: 75% of the facilities exhibited some types of data, mostly for maternal and child health and more than 90% of these facilities have updated them in last three months.

Feedback: 57.8% of the facilities showed documentation of having received feedback reports, while eight districts (100%) stated that they send feedback, indicating a gap in feedback communication (22)

HMIS Performance

The assessment done on at Guanajuato State, Mexico, in January 2010 to measure and improve Routine Health Information System (HIS) performance showed that the routine health information system performance in terms of data accuracy, completeness, timeliness, use of information as follow:

Data accuracy: Data accuracy at health facility level was above 95% for all indicators such as Antenatal care first visit (ANC1), malnutrition in children <1, and diabetes cases. The accuracy at the district level was found to be 85%, 75%, and 75% for (ANC1), malnutrition in children < 1, and diabetes cases respectively.

Completeness: Completeness for filling the monthly report at health facility level was only 22% where as the district level it was found to be 100% for three districts; five other districts had no data on completeness.

Timeliness: Out of eight districts two of them did not have records to measure timeliness. The six districts that had records showed 62.7% timeliness, indicating in those districts 62.7% of facilities met the deadline.

Information Use: 61% of the health facilities showed documentation on holding meetings. Of those facilities, 41% discussed and made decision using routine HMIS information, while in 27% of the facilities, decisions were referred to a higher level for action. Sixty four percent of the facilities also had reports (feedback, monthly, quarterly, others). Out of those health facilities,

reports showed decisions for strategy review (94%), adjust personnel (92%), advocacy (84%), and mobilizing resources (76.2%) [25].

CHAPTER THREE

METHODOLOGY

3.1 Study Area

The study was conducted in Dessie City Administration; South Wollo, between January to June/2017. Dessie Town is found 401 KMs from Addis Ababa in North East direction. It is about 1801 meters above sea level. Based on the 2007 census results, Dessie has a projected total population of 246,380 consisting of 118,262 men and 128,118 women in 2011. There are different types of facilities within these boundaries. The health facilities which are found in these boundaries are one government referral hospital, three private hospital, eight health centers, ten health posts, four government clinics, ten private clinics, Fifteen medium clinics, Eighteen lower clinics and Twelve special medium clinics.

3.2 Study Design

A pre- and post-intervention cross-sectional descriptive study design was used to highlight the routine HMIS performance in terms of improved data quality and continuous use of information. In addition, to identify factors affecting data quality and information use will be assessed to generate and implement possible interventions.

Quantitative methods to assess the factors influencing the performance of HMIS in the MCH department and qualitative methods to assess data quality and information use by using the adopted from **WHO DQA tool**. The study involved data collected before and after the data quality and information use improvement intervention were applied.

3.3 Source and Study Population

The source population for quantitative study was all fully functional health centers found in Dessie City Administration. The study population was all functional health centers found in same City that implemented HMIS for about a year or more and were selected during the sampling procedure.

For qualitative study, the source population was all health professionals who are working in MCH department, head of health center and the HMIS focal person of the health center. The study populations were the head nurse of MCH unit, HMIS focal person, head of health center and one person from MCH unit who have better knowledge on recording and reporting. However all the professionals should work in their respective position for at least three months? Records of documents: registries, charts, tally sheets, meeting minutes, and other documents were tracked to examine the Department's routine performance monitoring practice.

3.4 Sample size

All fully functional health centers that implemented HMIS for about a year were included in the study..Accordingly, Dessie city Administration has 8 health centers and all fulfill the inclusion criteria. Thus, the sample size was eight Health Centers namely Segno- Gebeya HC, Dessie HC,Bani-Buha HC, Kurkur HC,Tita HC,Gerado HC, Boru Silase and Metero HC.

For the qualitative study, a total of 16 individuals were interviewed; two responsible person from each health center, head of health centers, MCH head and/HMIS focal person.

3.5. Study period

The initiation and planning phase of the project was done December 2016 until the school approved the project and gave the ethical clearance paper.

- ❖ Pre intervention data were collected in January- February/2017
- ❖ Intervention period from February-March/2017
- ❖ Post intervention March -April 2017

3.6 Data Collection Instrument

Data collection instrument was adapted from **WHO DQA tool**, which include: Data management and reporting tools, Data verification tools and Information Use tools. These include three protocols, namely: 1) Systems assessment protocol, which help identify potential

challenges to data quality created by the data management and reporting systems 2) data verification protocol and 3) Information use assessment.

The system assessment composed of four functional areas of the data management and reporting systems: M&E structures and capabilities including trainings; availability and use of data collection and reporting forms and tools; Data management process and information use.

The data verification of reported data for key indicators, aims at assessing accuracy of collected and reported data. This was done through cross-checking the reported results with other data sources. To do this the data quality assessment will determine if a sample of service delivery sites have accurately recorded the activity related to the selected indicators on source documents. It was an in-depth verification.

Assessment involved both document review as well as observation on-site using the revised WHO guideline on routine data quality assessment tool (WHO DQS 2009). Scores were generated for each functional area at the service Delivery points. For each of the Four Functional components questions were asked, with responses coded as follows: 1 – No, not at all; 2 – Partly; 3 – Yes, completely. The scores were intended to be compared across functional areas as a means of prioritizing system strengthening activities. For data verification protocol evaluated by 0-no; 1-yes.

Indicators: eight indicators that are crucial for MNCH program monitoring and decision making purpose were selected. This included:

- ✓ *Number of pregnant women received four or more ANC visits;*
- ✓ *Number of deliveries attended by skilled attendant;*
- ✓ *Number of delivered women received postnatal care within 48 hours;*
- ✓ *Number of HIV positive pregnant women received ART;*
- ✓ *Number of infants vaccinated for penta3 immunization;*
- ✓ *Number of women received Contraceptive;*

- ✓ *Number of HIV positive pregnant women received antiretroviral prophylaxis to prevent mother to child prevention (PMCT).*
- ✓ *Number of infants treated for pneumonia.*

Reporting period: this assessment considered the second quarter of this year (Oct. to Dec 2016). The recounting was done for each month based on the HMIS reporting schedule i.e. from 21st of last month till 20th of current month using Ethiopian calendar.

Data sources: family planning, ANC, Delivery, PNC, EPI and PMTCT registers; FP and EPI tally sheets; and monthly service delivery report was taken as data sources.

3.7 Data Entry and Analysis

For quantitative analysis data was entered up on completion of data collection; cleaned and analyzed with the MS excel. The analysis included calculating the percentage of reports available, completed and prepared and received in a timely manner at the health post, health center and woreda levels. The “result verification ratio (RVR) for key indicators will also be computed.

3.8 Quality Assurance

- ❖ The collected data was checked for completeness, accuracy and consistency by the researcher every day. Anything, which is unclear and ambiguous, is corrected immediately.
- ❖ The qualitative data collection was conducted by the researcher for smooth communication; this clarified many „vague issues which might be misunderstood or misrepresented by some other person other than the researcher.

3.9 Ethical Consideration

The study was carried out after getting written permission from Research and Ethics Review committee of Addis Ababa University School of Public Health and Information System.

Before conducting the survey, written permission was obtained from the Amahara Regional health Bureau and South Wollo Zonal Health Department and Dessie Health Office. The data collection consent was obtained from the Dessie city Administration health office. All the project participants were briefed on the purpose and benefits of the project and the consent was obtained in advance from each participant. Verbal consent was obtained from all study participants before their participation in the study. Each study subjects was informed about the objective of the study and privacy was maintained during data collection.

3.10. Dissemination of Results

After the project was completed, the achieved results were disseminated to Addis Ababa University and Dessie Health office that potentially could benefited from the deliverables of the project. The report of the project should be placed in the libraries of Addis Ababa University as well as filed at Dessie city Administration health office as reference for those who are interested to make further research in the area of HMIS performance and its determinants.

3.11. Operational Definitions

Spider Diagram: shows the result of the quantitative system assessment at the service delivery point. The tool assesses four areas of the data management and reporting system. These are:

- Monitoring and Evaluation Structure ,Function Capacities, Roles and responsibilities
- Data Collection and Reporting forms and tools and guidelines
- Data Management Processes and
- Information use

These four areas were in turn weighted based on composite sub components and are scored between zero and three, with 2.5 – 3.0 indicating full system strength, 1.5 – 2.49 indicating partial strength and less than 1.5 indicating no system in place. These scores are directly linked to answers of Completely, Partly and Not at All respectively. Zero is located at the center of the diagram and 3 is located at the edge of the diagram.

2.5-3.0	Yes completely
1.5-2.49	partly
<1.5	Not at all

Data quality: refers to state of data accuracy, completeness and timeliness that make data appropriate for use in identifying gaps, setting targets, making various decisions and providing evidence based feedback.

Data accuracy: refers to that the data compiled in reporting forms is accurate and reflect consistency between what is in reporting forms and in what is in registries at health facility level. Similarly, it refers to that when data entered in to computer file, there is no inconsistency between figures in reporting forms and computer file at woreda health office.

Source documents: refers to registers and tally sheets of the respective indicator at service delivery points.

Completeness of source documents: all the required information in the registers of a given record should be filled.

Verification Factor/Ratio = Sum of reported counts from all Service Delivery Points

Total count contained in the Summary Report

- ❖ Verification factor less than 0.84 or 84% signifies over reporting, 0.85 – 1.14 (85 – 114%) signifies acceptable accuracy level and Verification factors greater 1.15 (115%) signifies under reporting.

Reporting performance: Review availability, completeness, and timeliness of reports from all Service Delivery Sites.

HMIS: an organized system of recording, record keeping, processing, reporting and use of generated information in health sector.

Indicator: an indicator is a variable that measure one aspect of a program or project which directly related to the program/project objectives. Example: Number of pregnant women received four or more ANC visits; number of deliveries attended by skilled attendant; Number of delivered women received postnatal care within 48 hours; Number of HIV positive pregnant women received ART; Number of infants vaccinated for penta3 immunization etc.

Data verification: Recount results from the registers or periodic reports sent from lower levels and compare to the value reported to the next upper level.

Medical patient index: is a database that is used across a healthcare organization to maintain consistent, accurate and current demographic and essential medical data on the patients seen and managed within its various departments.

CHAPTER FOUR

RESULTS AND DISCUSSION

The findings of this project were presented as a baseline routine data quality and information use practices and the four key functional areas of determinants affecting HMIS were described. Then interventional activities were done to bring the improvement were expressed and finally improvement achieved during post intervention was compared to the baseline data.

4.1 Description of the Pre-intervention assessment

The assessment involved interview of responsible person, source document review and on-site observation of each health centers on MCH departments. Semi-structured interview guide was also used to identify factors influencing data quality and information use. In addition records of documents: registries, charts, tally sheets, meeting minutes, and other documents were tracked to examine the department's routine performance monitoring practice.

4.2 Pre-intervention Assessment Result

MCH department collected data and sent monthly report on paper to HMIS unit during every monthly reporting period. The monthly summaries were then converted in to electronic format by an information officer at the HMIS unit and sent to zonal office.

4.2.1 HMIS Data Quality

4.2.1.1 HMIS Data Accuracy at Health Centers

Dimensions of data quality included data accuracy, availability, completeness and timeliness of HMIS monthly reports. The routine collection of HMIS data at health facilities started with data collection from registers at each services delivery points where clinical care is provided. Thus, the staffs at MCH department collected data and sent monthly report to HMIS unit on monthly basis. The monthly summary was then entered to electronic database by an information officer at the HMIS unit and sent to zonal health office.

The data accuracy rate was computed as the proportion of recounted values from source documents over the reported value to the next higher level. According to WHO data accuracy standard, the acceptable accuracy level is between (85 -114%).The findings of pre-intervention assessment of this project showed that on average, almost all indicators were within the acceptable range except PNC and ART where over-reporting was common and overall in about 83.8% cases the indicators properly matched between what is in registers and what is in reporting from at health facilities level (Table 1 below).

Table 1 Routine HMIS data accuracy by the indicator types

Data element	November			December			Total		
	Recounted # from Registries	Reported # from report	Verification Ratio	Recounted # from Registries	Reported # from report	Verification Ratio	Recounted # from Registries	Reported # from report	Verification Ratio
CAR	717	735	97.6	490	564	86.9	1207	1299	92.9
ANC	137	171	80.1	128	153	83.7	265	324	81.8
SBA	102	110	92.7	97	110	88.2	199	220	90.5
PNC	65	95	68.4	43	92	46.7	108	187	57.8
ART	8	10	80.0	6	10	60.0	14	20	70.0
PMCT	1	1	100.0	1	1	100.0	2	2	100.0
Penta3	259	301	86.0	227	261	87.0	486	562	86.5
PCV3	245	299	81.9	194	212	91.5	439	511	85.9

As depicted in Figure 2, on average, nearly 37.5% of the facilities over report all indicators however, over reporting was prominent in PNC, ANC and penta3 contributing 30 -70%. Similarly, level of under reporting was high in SBA contributing 35%. Health facilities wise, over reporting in majority of the indicators were noted in Gerado HC, Segno- Gebeya HC, and Dessie HC. CAR and ANC were found to be under reported while PNC and ART were over reported in majority of the health facilities. High level of precision was observed in Buni-Buha HC, TitaHC, Kurkur Hc, Metero HC, and Brusilase Hc.

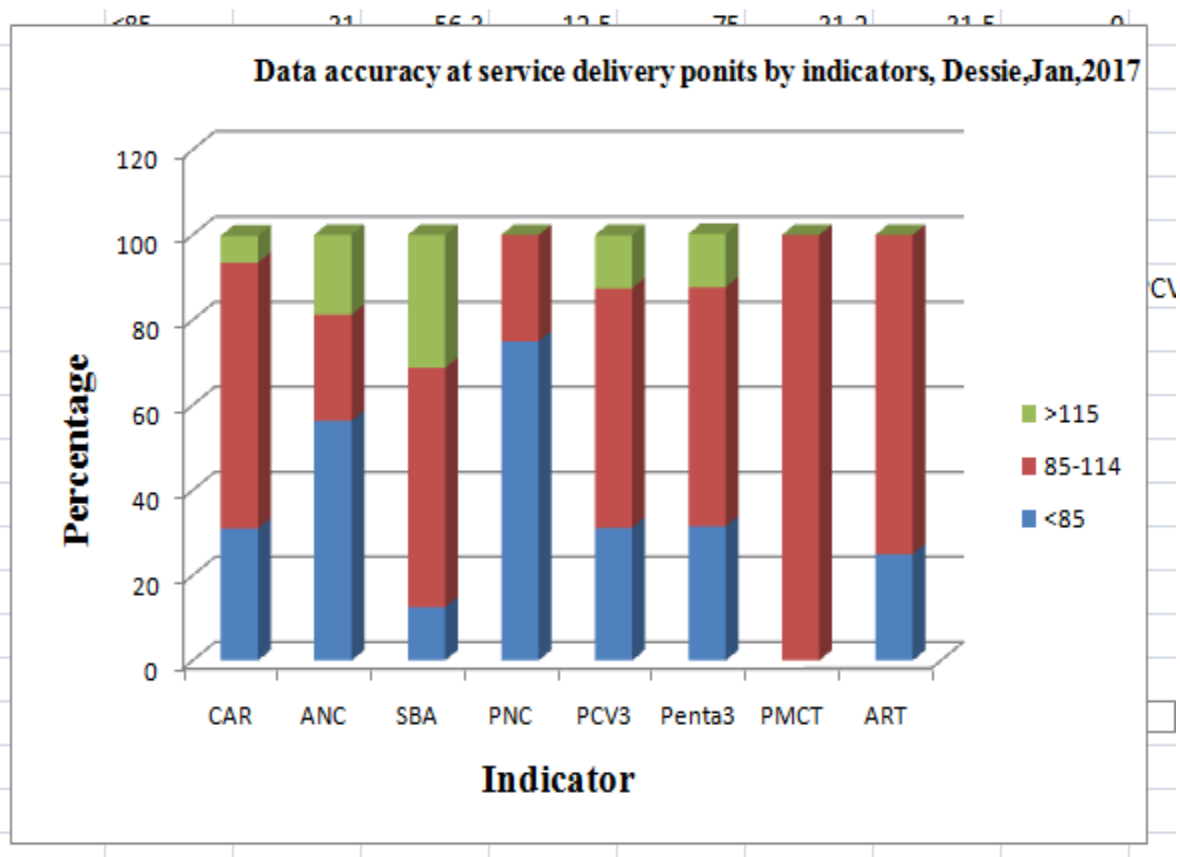


Figure 2. Data accuracy at service delivery point by indicators, Dessie, January 2017.

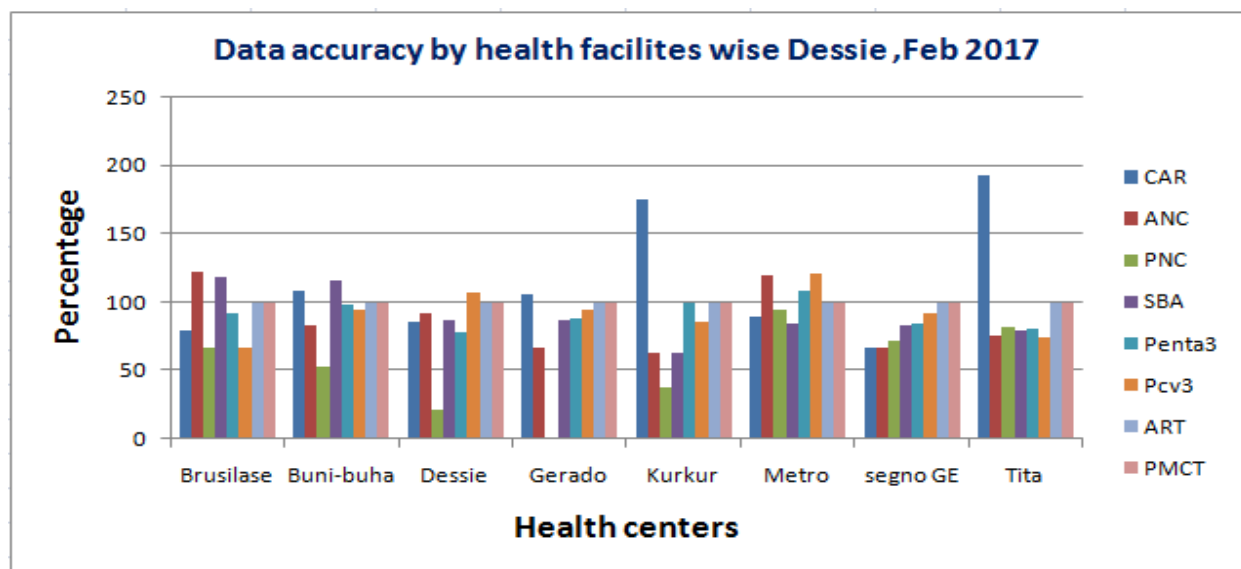


Figure 3. Data accuracy health facilities wise Dessie January, 2017

4.2.1.2 HMIS Report source document availability

For the pre-intervention assessment of this project the availability of source documents (registers and tally sheets) for the selected 8 indicators was assessed in all facilities and averagely source documents of each indicator were available in 87 % of the facilities for the selected reported period, 2nd Quarter of 2009 EFY.

4.2.1.3 HMIS Report data Completeness at health centers

For the pre-intervention assessment of this project, the completeness of routine HMIS monthly reporting was measured in terms of whether Health Facilities reported all the HMIS indicators filled against the total number of HMIS indicators that the Health facility was supposed to fill. Accordingly, available indicator source documents HMIS sources document monthly reports that were routinely reported by health centers were assessed majority 86 % of the available indicator source documents were found to be complete. in figure 3, source document completeness varies with indicators, Around 81.3% of the source document for Penta 3 and PCV3 were fully complete while less than half 43.8% of the source documents for PNC were fully complete.

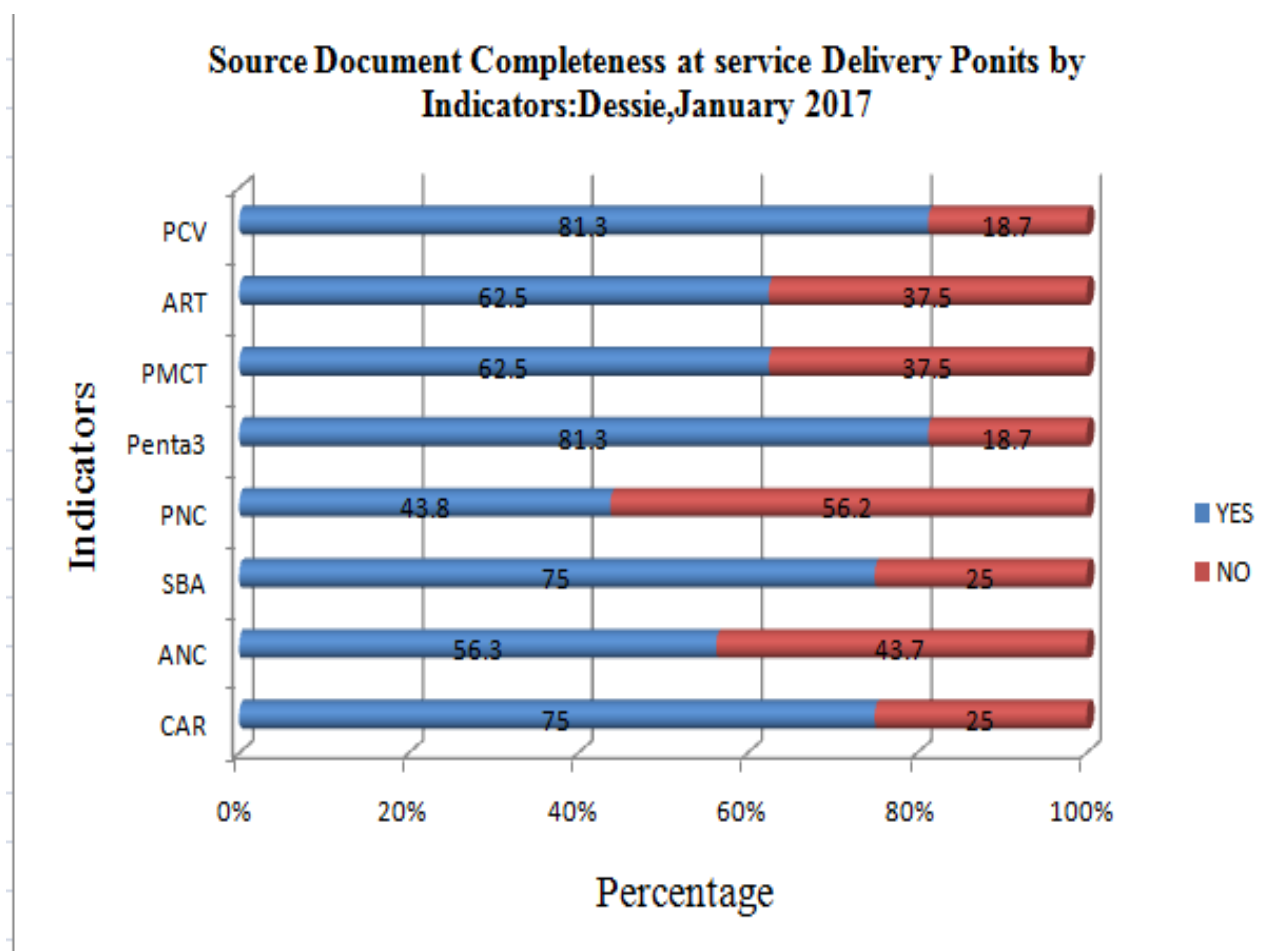


Figure 4: Source document completeness at service delivery points by indicators, Dessie, January, 2017

4.2.1.4 Timeliness of indicators on source document

Another dimension of routine HMIS data quality that was assessed at pre-intervention assessment stage of this project was timeliness of monthly HMIS data reporting. Timeliness of monthly HMIS data reporting is measured by checking whether HMIS data reporting by the health facilities met the predetermined deadline of reporting period. As the reporting date on the report form indicated, 82.8% of the facilities agree with the national standard period.

4.2.2. Determinants of HMIS Performance

As asserted by the WHO DQA tool framework, for good quality data to be produced by and flow through a data management system, key functional components need to be in place at all levels of the system:- M&E structure, Data collection tools/forms and guide lines , Data management process and information use.

4.2.2.1 M&E Structure, Functions and Capabilities

The M&E structures , function and capability including training is one of the functional area to assess system and can be clarified as factors that data management staff members identified with a clearly assigned role and responsibility and received the required training in accomplishing routine HMIS tasks [17]. During pre intervention as sub components of M&E structure were assessed. Those were availability of HMIS focal person for reviewing aggregated number prior submission to next level, availability appropriate staff to record on sources document, trained staff on data management process and tools, integration of all program to each other, and display charts/ results as well as establishment of performance monitoring team to assess the M&E determinants of HMIS performance in the project.

Interviewing of key informants, reviews of documents and observation of the overall information system of the department showed that averagely, all the assessed sites started implementing the reformed HMIS for about four years with a range of 24 months and 12 months standard deviation, but majority of the health centers had started implementation with no fulfill these precondition (shelf, computers, card room workers, formats and cards, MPI box). Among all study sites, 8(100%) has assigned full time HMIS focal person who responsible for reviewing and aggregating numbers prior to submission to the next level. Although there are persons assigned to be HMIS focal person they are engaged in other major responsibility like head of Health center. (E.g. in Buni- Buha HC the HMIS focal person acts as the head of health centers ; and Metro Health Center Nurse act as the focal persons who are currently handling 15-20 patients daily). profession wise, in all health centers majority of HMIS focal persons were IT professionals followed by Nurse. The head of each department of health facilities collected data and sent monthly report on paper to HMIS unit during every monthly reporting period then the

monthly summaries of HMIS reports were converted in to electronic format by Health Information officer at the health facilities and sent to the zonal health office. The time taken to compile all facilities averagely 3.5 days from all departments and sent to higher level.

Interviewing of the head of health centers, during pre intervention indicated that the availability of staff recording on source document and training of staff on data management processes and tools, all 8(100%) of the health centers have appropriate staff to record on sources document and there was short training was given before 4 years for five days on HMIS but it has less focus on indicator definition, computation and recording and reporting procedures. Of served health centers all health centers 50% of the staff trained.

Observation of the overall HMIS activities of the department during pre intervention showed that nearly 37.5% of the health centers display charts that to update and accurate. In addition integration of all program to each other were assessed, majority 7(87.5%) of health centers were partially integrated to each other including ART.

Review of documents and interviews during pre intervention revealed that no more than 3(37.5%) of facilities establishing Performance Monitoring Teams.5 (62.5%) health centers, have PMTs but the team holds incomplete staffs due to there is frequent staff turnover so HMIS information was not discussed and not review their performance periodically and no regular meetings in the last three months and had no evidence of making decisions using HMIS data.

Table 2: Summary of M&E Structure, Functions and Capabilities Performance of health facilities visited during the assessment period, Dessie, January 2017

Variables	Health centers	
	No.	%
<i>Availability of HMIS Focal Person</i>		
Yes	8	100
Partially	-	-
No	-	-
Recoding sources document by relevant staff		
yes	8	100
Partially	-	-
No	-	-
Staffs trained in DM process and tools		
Yes	-	
Partially	8	100
No	-	
All program Integrate		
Yes	1	12.5
Partly	7	87.5
NO	-	-
Display charts up to date and accurate		
Yes	3	37.5
Partly	-	-
NO	5	62.5
Establishment performance monitoring team		
Yes	3	37
partly	-	-
NO	5	62.5

4.2.2.2 Data-Collection and Reporting Forms, Tools and Guidelines

The data collection, reporting forms, tools and guidelines were also another functional area to assess the systems through by assessing reporting standards availability and use of data collection and reporting forms and tools that are systematically used throughout the M&E data management system to measure relevant indicators and data are maintained in accordance with a written policy [26]. During pre intervention assessment, availability and adequacy of data collection tools and service cards; using of standard tools/forms for reporting and constantly use this forms/tool; source document is relevant for measuring the indicators; usage of unofficial forms for registers, tally and report; supportive supervision from high level; competency of

HMIS focal persons for recording, reporting and computation of indicators were assessed. Accordingly both health facilities were assessed and the result shows as follows.

Interviewing of key informants, and onsite observation of the overall recording and reporting performance showed that the availability and adequacy of data Collection tools(registers and tally sheets) and service cards was assessed and the tools in 3 (37.5%) facilities was not adequate and no consistently use standard forms/tool.

Interviewing of MCH head and on site observation indicated there was shortage of registers and tally sheets such as immunization tally, family planning tally and reporting formats and postnatal tally sheets ,and etc; they are forced to use other registers so called “unofficial” registers and reporting formats so it is difficult to fill the registers correctly. Of served health centers 5(62.5%) of service delivery points use unofficial recording and reporting tools. Nearly all 100% of health centers sources document and reporting forms are relevant for measuring indicators. During pre intervention assessment regarding the competency of HMIS focal person on recording and reporting procedures and computation of indicators were assessed,4(50%) and 5(62.5%) of health centers HMIS focal person were partially known the recording and reporting procedures and calculation of indicators.(E.g. PMTCT completion rate, Deliveries by SBA, ANC 1st visit coverage, CAR, etc).Of all surveyed Health Facilities, all 100% of service delivery points had not received supervisory visits during the last three months.

Table 3: Summary of Data Collection and Reporting Forms, Tools, and Guidelines Performance of Health Facilities Visited During the Assessment Period. Dessie, January 2017

Variable	Health centers	
	No	%
Adequate service cards		
Yes	1	12.5
Partly	4	50
No	3	37.5
Adequate data collection tools		
Yes	1	12.5
Partly	4	50
No	3	37.5
Use Standard forms		
Yes	3	37.5
Partly	5	62.5
NO	-	-
Consistently used		
Yes	1	12.5
Partly	7	87.5
No	-	-
Indicators relevant		
Yes	8	100
partly	-	-
No	-	-
use unofficial forms		
Yes	5	62.5
partly	3	37.5
No	-	-
Knows recording and reporting		
Yes	4	50
Partly	4	50
No	-	-
Supportive super vision		
Yes	-	-
partly	-	-
No	8	100
Computation indicator		
Yes	3	37.5
Partly	5	62.5
NO	-	-

4.2.2.3 Data Management Processes

Data management process also another functional area to assess data management and reporting system performance by identifying data quality challenges and mechanism in place for addressing them by assessing documentation processes like collection, aggregation and manipulation. During pre intervention the areas that were assessed, individual folders ordered numerically and use MPI cards for indexing, medical records are complete and returned to medical record unit immediately after clients receive their service, all tally sheets are available and filled regularly, the HMIS focal person collects tally sheets on a regular basis and required reportable data elements are aggregated and filled monthly, the service delivery points check their data quality by using Lots Quality Assurance System (LQAS),availability copies of reports sent to high level as well as the recording and reporting system avoids double counting people within and across Service Delivery Points and enables the identification and recording of a "drop out", a person "lost to follow-up" and a person who died.

Interviews and onsite observation during pre intervention revealed that majority 87.5% of health centers in the card room, cards were arranged according to the Medical Record Number (MRN) with in specified range. Some health centers use master patient index (MPI) for indexing contributing 2 (25%).Regarding completeness of medical records and availability of duplicate medical record number,majority6(75%) of health centers the required data were included partially and nearly 50% of health facilities more than one cards are availablefor one clients.

Of all surveyed Health Centers, only 3(37.5%) return their medical records to medical record unit immediately after clients receives the service. The availability and filling of tally sheets was assessed and the tally sheet in 6(75%) facilities was available and fills regularly.In addition all health centers were not collecting the tally sheets appropriately. Similarly all health centers HMIS focal persons were compiled and filling reportable data elements partially.

Review of documents and interviews during pre intervention the readiness of department data checking mechanism by the LQAS methods was low. Of all surveyed health centers,Only 3(37.5%) of the facilities checked their data quality using Lots Quality Assurance System

(LQAS). In addition confidentiality of medical charts and data was assessed, 100% of health centers were partially keep data behind closed doors.

Interviewing of key informants (MCH head, Health center Head and HMIS focal person), reviews of documents and observation of the overall information system of the department showed that all monthly reports and registers related to the project period were available in the health center (HMIS room) even though the documentation systems were not well organized. The pre intervention result of the project showed that availability of copies of reports sent to higher level was assessed, none of the health centers were keeping reports fully. In addition the pre intervention assessment of result showed that the system that used for recording and reporting avoids double counting a person receiving the same service twice in a reporting period (a person registered as receiving the same service in two different location) and enables the identification of a "drop out", a person or "lost to follow-up" clients from the service was assessed, among all study sites none of the health centers have the system for identification.

Table 4: summary of data management performance of health facilities visited during the assessment period, Dessie, January 2017

Variables	Health Centers	
	No of HCs	%
Folder numerical order		
Yes	8	100
Partly	-	-
No	-	-
Use MPI card for indexing		
Yes	2	25
Partly	6	75
NO	-	-
Duplicate MRN		
Yes	4	50
Partly	-	-
No	4	50
Records complete		
Yes	-	-
Partly	8	100
No	-	-
MRS Return		
Yes	3	37.5
partly	5	62.5

No	-	-
Register appropriately used		
yes	8	100
Partly	--	-
No	-	-
Availability of tally sheet and filled regularly		
yes	6	75
Partly	2	25
No	-	-
Collect tally sheet regular basis		
Yes	-	-
partly	8	100
No	-	-
Data element filled and aggregated		
Yes	-	-
Partly	8	
No	-	-
confidentiality		
Yes	-	-
Partly	8	100
No	-	-
LQAS		
Yes	3	37.5
Partly	6	62.5
No	-	-
Keep copies		
Ye s	-	-
Partly	8	100
No	-	-
System avoid double counting		
Yes	-	-
Partly	8	100
No	-	-
System identification of drop out		
Yes	-	-
Partly	-	-
No	8	100

4.2.2.4 Information Use

Information use in health unit management and health system management functions had resulted in improvements in knowledge about the current health and management situation and use of such knowledge in routine management decisions. Some good examples of use were: performance monitoring team evaluate report on monthly basis, Action plan developed and documented for further follow up, service delivery points discussion about RHIS such as patients utilization; Service coverage and does the districts office display information.

The use of information was assessed through a review of documents performance monitoring team analyze report on monthly basis, action plan is develop and documented for further follow up, whether HMIS information was discussed in staff meetings; and whether updated information on performance monitoring was displayed in the office through table, charts and graphs.

Interviewing of key informants, reviews of documents and observation of the overall information system of the department showed that the quality of data and information use for most of the health centers were low. The practices of HMIS information use were assessed in all health centers 5 (62.5%) of the health facilities partially evaluate report by performance monitoring team on monthly basis.

Interviewing of health centers management also indicated there was annual plan with set targets found in management office but all health centers was no routine performance monitoring according to the plan and the plan was also not fall to departments and individuals.

Interviewing of key informants, reviews of documents and observation showed that data usage for planning, decision making and discussion about Routine health information system were low particularly MCH department. Of served health centers 3(37.5%) of health centers had discussion about Routine health information system. In addition, it was also assessed by observing the presence of HMIS data display by table, chart or graph on core indicators MCH department but results shows that 3(37.5%) of health centers have display charts by table.

Table 5: Summary of Information use Performance of Health Facilities Visited During the Assessment Period. Dessie, January 2017

Variables	Health centers	
	No. of HCs	%
Analyze report monthly basis		
Yes	-	-
Partly	5	62.5
No	3	37.5
Action plan develop		
Yes	-	-
Partly		
No	8	100
Discussion about RHIS		
Yes	-	-
Partly	3	37.5
No	5	62.5
Display information		
Yes	-	-
Partly	5	62.5
No	3	37.5

4.2.3 Data Management and Reporting System Performance

Regarding data management and reporting system, these four areas were in turn weighted based on composite sub components and are scored between zero and three, with 2.5 - 3.0 indicating full system strength, 1.5 – 2.49 indicating partial strength and less than 1.5 indicating no use system in place. These scores are directly linked to answers of Completely, Partly and Not at All respectively. Zero is located at the center of the diagram and 3 is located at the edge of the diagram The outcome of the above assessment will be identified strengths and weaknesses for each functional area of the data management and reporting system to develop a system strength plan.

As depicted in the spider graph, for the service delivery sites, no single system showed complete strength (see fig5). However, partial strengths were observed in M&E Structure, Functions and Capabilities; Data-collection and Reporting Forms, Tools and Guidelines and Data management process (scored 2.4,2.2and2.3) respectively. On the other hand, significant system weakness was detected in information use (scored1.4).In health facilities wise Gerado and Metro Health centers

showed significant system weakness (scored 1) in information use. Generally partial system weakness in all components was observed in all health centers.

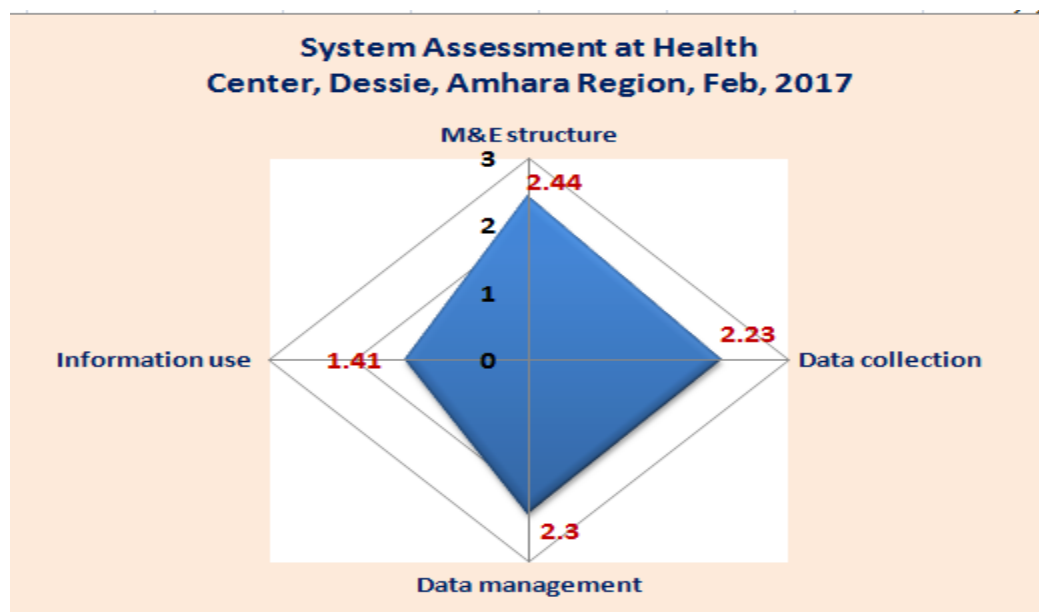


Figure 5: Graph of Data Management and Reporting System Performance at Service Delivery Site, Dessie, January 2017.

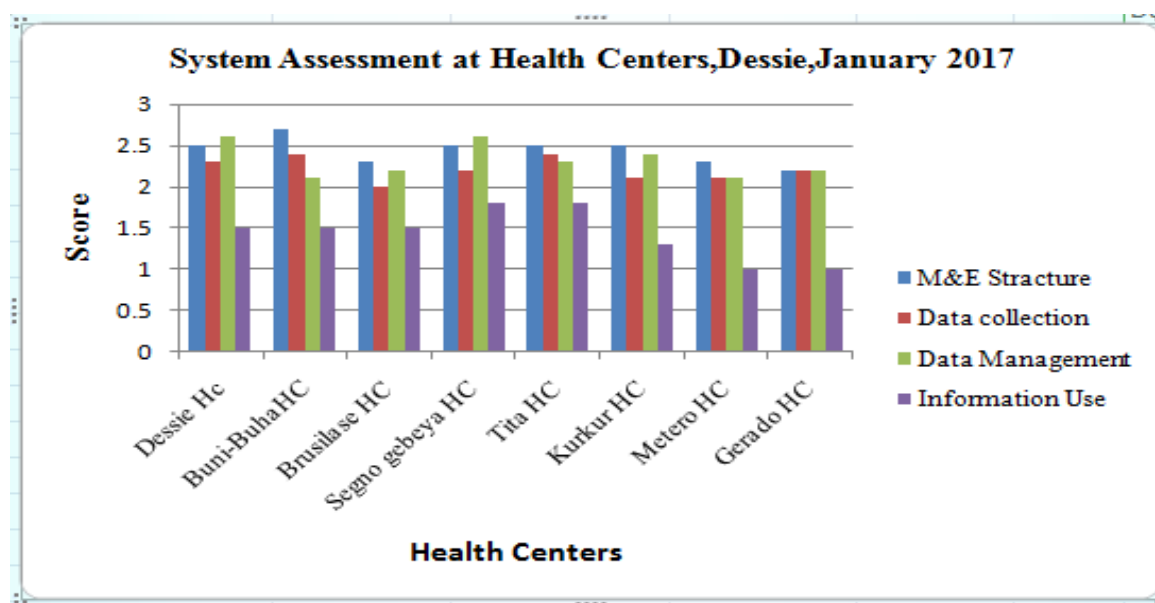


Figure 6: Data Management and Reporting System Performance at Service Delivery Site, Dessie, January, 2017.

4.3 Interventional Activities

According to the findings and recommendations for each site, action plan was developed for system strengthening based on the relative weakness of the different functional areas of the system assessment. (See annex).

Interventions made by the project for improving HMIS data quality and information use practice in case of Dessie City Administration comprise discussion and preparing action plan for the interventional activities with management team of health centers, presentation of pre interventional findings and discussion with project participant on identified weakness, on job training, established performance monitoring team, supportive supervision, provide data Collection tools/forms and service card, data audit as well as performance review meeting.

4.3.1 Presentation of Pre intervention findings and discussion with Project Participants on identified weakness

The finding of pre intervention assessment of this project was presented and discussion with the project participants on the identified weakness and proposed solutions was undertaken. In addition the staffs were briefed about indicator definition, computation, recording and reporting procedures as well as on the methods of data quality check and purpose of information use for three days in order to increase their awareness and motivation data quality dimensions, data management process and reporting system and culture of information use. In addition awareness creation was conducted for project participants during presentation of pre intervention result and discussion on gap identified. Therefore, this awareness creation with the continuous follow ups through review meeting and supervision motivated the health facilities to perform HMIS tasks after intervention.

4.3.2. On the Job Training

The Project Manager and HMIS performance improvement team were organized the training. The training principally involved the heads of health centers, health information technicians, and

MCH department head of each health facilities and two experts of planning and budgeting team from zonal office who were responsible for HMIS performance.

This on- job training was designed to help the participants as they appreciate that high-quality data and continuous information use are essential for improving performance of health service delivery.

To meet the intentions of the training, addressed areas were generally provided as follow:

- Concept/definition and purpose of HIS and HMIS
- Key concepts and purpose of information use for local evidence based decision making
- Meaning of data quality and how it can be assured
- HMIS indicators definition, computation, recording and reporting procedures
- Methods of data quality check

4.3.3 Organizing HMIS Performance Monitoring Team

Organizing HMIS performance monitoring team was crucial for success of the project since culture of information that is ensured by promoting values and beliefs for collection, aggregation, transmission, analysis use of health information for evidence based decision making and is a subset of organizational culture, it can be strengthened if all staff within an organization are involved. Therefore, members who involved in improving data quality and use of information include Head of health centers, Matron Nurse, HMIS focal person and head of MCH department.

The team was established with the aim of initiating higher management and making them to be active participants of this project.

4.3.4 Monthly performance Review Meeting

The overall objective of the monthly performance review meeting was to assure result-based monitoring and evidence-based decision making for improving the health facilities performance of the department.

Monthly performance review meeting were carried out in the department by data quality improvement team. During these meetings, the team has discussed on the performance of the department emphasizing on the availability, completeness, and accuracy of the indicators and utilizing of information for decision making at the department. The meeting minutes kept after review meeting was used as information to guide the day to day activities of the staffs monitors their performance, learn from past results, and improve their accountability.

4.3.5 Supportive supervision

Supportive supervision was another important motivating factor for achieving quality of data because it is ongoing support to health workers sharing experience and a way of providing feedback and training for the staffs on their data management practices. Close follow up with feedback could contribute to improving overall performance, particularly to better data quality. Supportive supervision provides opportunities that could be used to improve the understanding of data and skill level in interpreting results. In order to motivate staffs to improve or maintain their commitment feedback is necessary.

During supportive supervision the following activities were performed

- ❖ Observation of data collection activities and indicator computation.
- ❖ Comparing sources of data (registers and tally sheets) with reports sent by the department to the HMIS unit.
- ❖ Explaining the strengths and weaknesses of data collected and reported.

4.3.6 Supply Data Collection Tools/Forms and Service Card

As identified by pre-intervention assessment, there was shortage of registers and tally sheets such as immunization tally, family planning tally and reporting formats and postnatal tally sheets, and etc; they are forced to use other registers so called “unofficial” registers and reporting formats. In order to full fill this gap and compare the health professionals the difference to use standard forms/tools in data quality, this tools/forms distributed for each health centers at least for one year from regional health bureau and discussion was conducted with South Wollo zonal health desk and all stake holders for continuity of this forms/tools.

4.3.7 Data Audit

Facility check list adopted from WHO DQA tool was used for assessing accuracy of data, availability, completeness and timeliness of monthly HMIS data reporting in the department during the data audit. The data audit was carried out by principal investigator, using eight MNCH indicators collected from health facility’s registries covering the two months form 21 October to November20/2016 and 21 November to 20 December/2016 G.C. before intervention using indicators and amended the tool to only one month 21 March to 20 April/2017, using the same indicators after intervention. After the data audit and performance review meeting, PM provided each facility with action-oriented feedback on its data quality.

4.3.8 System identification of lost follows up and avoids parallel reporting

As an intervention, discussion with South Wollo zonal health disk and to all stake holders HMIS recording and reporting tools and one report system should be re-communicated to avoid parallel reporting and identification of lost follow up, it is ongoing process.

4.4. Post-interventions assessment results

4.4.1 HMIS data accuracy at health centers

The findings of post-intervention assessment of this project showed that the data elements which completely matched between what is in registers and what is in reporting forms at health

facilities level was increased from 87.3% before to about 97.4% in overall selected cases during 21/07/2009 – 20/08/2009 E.C after intervention which was compared with the Ethiopian National HSDP IV target which was 90%. On average, nearly 100% of the facilities fall within the acceptable range in all indicators (see table 6).

Table 6. Below shows the routine HMIS data accuracy by the indicator after intervention

Indicators	APRIL		
	Recounted # from Registries	Reported # from report	Verification Ratio
CAR	565	595	95.0
ANC	169	169	100.0
Skilled delivery	96	96	100.0
PNC	55	61	90.2
ART	3	3	100.0
Penta3	266	270	98.5
PCV3	257	270	95.2
PMCT	1	1	100.0

4.4.2 HMIS sources document availability

The findings of post intervention assessment of this project showed that availability of source documents (registers and tally sheets) for the selected 8 indicators was assessed in all facilities and averagely availability of source documents of each indicator were increased from 95.3% before to about 100% during 21/07/2017-20/08/2017 after intervention.

4.4.3. HMIS report completeness at health facilities after intervention

The results of post-intervention assessment of this project showed that the health centers those reported all the HMIS indicators filled against the total number of HMIS indicators which the health facility was supposed to fill were increased from 86.4% before to 100% after intervention which was compared with the Ethiopian National HSDP IV target which was 90%.

4.4.4 Timeliness of HMIS reporting

Concerning timeliness of HMIS monthly reporting, the pre intervention assessment identified only 82.8% of the health facilities found reporting within the predetermined reporting deadline as identified from date monthly report. Interventional activities of this project solve problem and timeliness of HMIS reporting was improved from 82.8% before to 100% after intervention.

4.4.5. M&E Structure, Functions and Capabilities after Intervention

4.4.5.1 Data Display

As identified by pre-intervention assessment, out of eight health facilities only at three health centers display charts that are update and accurate before intervention, indicating that the department was not using data to monitor their progress. Monthly review of performance monitoring on information use by quality improvement team and supportive supervision were the intervention undertaken. After intervention from the remaining five health centers 3(37.5%) of health facilities performance against targets/plan were updated and posted on the wall of the department.

4.4.5.2 Establishment of Performance Monitoring Team

In terms of promoting M&E structure, function and capability this project ensure Performance Monitoring Teams to be established at five health centers which was only at three health centers before intervention. After intervention all 100% health centers have functional and complete staffsso HMIS information was discussed and review their performance periodically and had evidence of making decisions using HMIS data.

4.4.5.3 On the Job Training

As identified by pre-intervention assessment in a public health sector where there is frequent staff turnover establishing continuous on-the-job training is very essential to improve HMIS task. During intervention period awareness creation was conducted for project participants during presentation of pre intervention result and discussion on gap identified. Therefore, this awareness creation to the relevant staff on data management processes and tools were increased from all of

health centers trained their staff 50%to 75% of the health centers receiving training after intervention.

4.4.6 Data-collection and Reporting Forms, Tools and Guidelines after Intervention

4.4.6.1 Data collection and reporting forms/tools

As identified by pre-intervention assessment, there was shortage of data collection, reporting tools/forms and service cards. During the intervention period to fill full this gap the researcher distributed this tools /forms. The results of post-intervention assessment of this project showed that all 100% of health facilities use official forms to register and report.

4.4.6.2 Supportive Supervision

As identified by pre-intervention assessment, out of health facilities visits, none of them was carried out supportive super vision. Thus, Supportive super vision particularly on HMIS data quality issues and information use practice was developed with involvement of HMIS performance improvement team established by this project and integrated it in to regular supervisory visits. This was aimed to cover the way for providing action-oriented feedback on HMIS data quality and information use by higher level to lower level administrative units.

The post intervention of this project showed that in all health centers supportive super vision was carried out.

4.4.7 Data Management after Intervention

4.4.7.1 All tally sheets are available and collects regular basis after filled

As identified by pre-intervention assessment; out of health facilities visits, one of them was collect tally sheets regularly before intervention. After intervention 4(50%) of health facilities collect sheets on regular basis.

4.4.7.2 Data Quality Check

Out of supervised Health Centers, 5(62.5%) of the health centers supervisors had not carried out data quality check by using of LQAS methods before intervention. Interventional activities of this project made possible the data quality check to be carried out at three health centers.

4.4.7.3 Availability of Reports

After intervention, a progress have been showed on the availability i.e. information management proper labeling, compilation and storage and monthly LQAS/self assessment report were well labeled and stored in a file cabinet and these were supported by providing a file folder. The post intervention of this project showed that all health centers keep copies of reports properly sent to high levels.



Figure 7 availability of reports after intervention

4.4.8 Information use after intervention

The pre intervention assessment of this project identified that HMIS data analysis at health center was conducted only in terms of generating monthly summary report for zonal health office. This project by its interventional activities enables all health centers conduct data analysis in terms of carrying out comparison of HMIS data over quarter, Comparison among service coverage by types and Comparison among facility's catchment areas. In addition, particular gap identified on Comparison of service coverage by types and with zone target at zonal health office level before intervention was addressed after intervention.

4.4.9 Data management and reporting System Performance after intervention

As identified by pre-intervention assessment, partial strengths were observed in all functional areas except information use which showed significant system weakness. As shown in table 6 after interventional activities, averagely the data management and reporting system performance were increased from partial strength (scored 2.1) to complete system strength (scored 2.8). M&E structure/function, capabilities scored 2.4 to 2.92; Data collection tools/forms and guide lines from 2.2 to 2.8; Data management scored 2.3 to 2.5 and information use scored from 1.4 to 2.7.

Table 7: Data management and reporting System Performance health centers, Dessie, April, 2017 after intervention

sites	M&E	Data coll	DM	Inf.use	AVG/site
Dessie Hc	2.83	2.89	2.5	3	2.81
Buni-Buha Hc	3	3	2.5	3	2.88
Segno Gebeya HC	3	2.88	2.64	3	2.89
Tita Hc	3	2.88	2.5	3	2.85
Kurkur Hc	3	3	2.71	2.75	2.87
Metro Hc	2.83	2.78	2.5	2.5	2.65
Brusilase Hc	2.83	2.88	2.42	2.75	2.72
Gerado Hc	2.83	2.67	2.5	2.5	2.62
AVG/fun.area	2.92	2.87	2.53	2.81	2.78

Table 8: Summary of Dimensions of the HMIS Data Quality before and after Intervention

Average Percentile (%)		
Variables	Pre intervention	Post intervention
Data Accuracy	83.3	97.4
Completeness	86.4	98
Timeliness	82.8	100
Availability of sources document	87.4	100

Table 9: Summary of Data management and Reporting System Performance before and after intervention with score b/n zero and three.

Variable	Pre intervention result	Post intervention result
M&E structure, function	2.4	2.9
Data Collection tools	2.2	2.8
Data Management	2.3	2.5
Information Use	1.4	2.7

4.5 DISCUSSION

Accurate, complete and timely health information on service delivery and other key indicators are crucial for health managers at each management spiral for decision making to reach more people with better quality health services. Routine Health Management Information System is the backbone for planning and management of the health services at district level and below, and can potentially play an important role in health services improvement and reporting at all levels [28].

As shown in the result section, this study assess the quality of reported data, the reporting performance and level of information use for decision making there by evaluating the M&E Structure, Functions and Capabilities ,data management process, use of data collection and reporting tools and information use. HMIS ultimately aimed in producing quality data and continuous use of information that leads to improved health outcomes. However, the reality is far different from this. Low management support, lack of training, lack of supportive supervision and lack of HMIS material supply were found to be some of the contributing factors for poor performance in the department under study.

The generated data were of low quality and the produced information was poorly utilized to support local decision making before the improvement interventions. But, after HMIS data quality and information use improvement interventions of this project, proportion of data accuracy has been increased from about 88.3% to 97.4%.Data accuracy can be defined in to two ways; whether the data registered in the registers accurately represent the actual number of client provided service or whether the data reported in the monthly report was consistent with data collected from registers. For this project, the second definition was used which means the data accuracy rate was computed as the proportion of recounted values from sources documents over the reported values to the next high level. Source documents for the selected indicators were available for the reporting being verified 87.4% to100% after the intervention in Dessie Zonal health sector. The level of data completeness has been increased from 86.4% before to 98% after the intervention. In addition, after intervention all 100%of the health facilities that were supposed to report were made to be actually reporting to the next higher level which was 82.8 before intervention. As shown by baseline assessments conducted on status of routine HMIS

performance in Cote d'Ivoire, averagely data accuracy level in health facilities was 55%. Between 2008 and 2012, data accuracy improved in Cote d'Ivoire by 17% at health facilities and doubled from 40% to 81% at district level [18]. Assessment undertaken at Guanajuato State, Mexico, in January 2010 showed that completeness for filling the monthly report at the facility level was only 22% while at the district level it was found to be 100% for three districts; five other districts had no data on completeness.

There were identified problem concerning timeliness of HMIS reporting: absence of record keeping as to measure timeliness of HMIS monthly reporting, and only 82.8% of the health facilities found reporting within the predetermined reporting deadline before intervention. These problems were addressed after intervention and thus, keeping records of HMIS monthly reporting both at health centers was ensured. Timeliness of HMIS reporting was improved from 82.8 before to 100 after intervention. Similarly, assessment of HMIS performance conducted in SNNPR of Ethiopia by MEASURE EVALUATION in collaboration with Regional health bureau showed that data accuracy level found very low at health facilities except hospitals, but data completeness and timeliness of facility reports were found relatively good [12].

Another dimension of HMIS performance was systems assessment, which help identify potential challenges to data quality created by the data management and reporting systems by evaluating M&E structure, Function and capability, use of data collection and reporting tools and guidelines, data management and information use improvement intervention of the project.

Having well organized M&E structure is vital for the implementation and stability of HMIS. However, according to this study, the M&E structure had got partial strength at all health centers scored 2.4. Lack of standard HMIS training modality, knowledge gap in the concept of M&E contribute for the low scoring of this component. As a result of the interventional activities of this project, M&E structure, function and Capabilities has been increased from about 2.4 to 2.9. Similarly an assessment of HMIS performance conducted in all the 9 regions and two city administrations Ethiopia showed that M&E Structure, function and Capabilities scored 1.9 [5].

The FMOH including the intermediate aggregation levels are expected to identify and provide standard recording and reporting forms/tools, reporting guidelines and to advocate single

reporting channel to their respective next lower levels. At service delivery point, significant portions of the assessed sites 5(62.5%) of service delivery points use unofficial recording and reporting tools. This finding is supported by the qualitative result as there was shortage of registers and tally sheets such as ANC register, FP method dispensed tally, they are forced to use other registers so called “Unofficial”. After interventional activities of this project data collection, reporting forms /tools and guide lines has been increased from about 2.2 to 2.8. This result is consistent with the study conducted in 2010 in health facilities and districts to improve data quality and information use for service delivery points the system shows relative strengths in the data collection and reporting tools (score 1.5)[19].

As sub component of data management, service delivery points were assessed for their regular and proper use of registers and tally sheets, data quality checking mechanism, MR indexing procedure and reporting performance score 2.3. The low performance might be explained as knowledge gap in data quality checking and data use, inadequate training in DM and poor perception of staffs towards recording and reporting. As a result of the interventional activities of this project, data management component increased from 2.3 to 2.5. Similarly an assessment of HMIS performance conducted in all the 9 regions and two city administrations Ethiopia showed that data management component scored 2.3 [5].

This project assessed use of information which is another dimension of HMIS performance and found to be low in the assessed department. Absence of continuous training, lack of supportive supervision, low management support and lack of feedback were the contributing factors for the observed minimum use of HMIS information in the department. This finding is consistent with the study done on Determinants of Use of Health Information in Ntchenje Health Area of Lilongwe District, Malawi which showed that information use was low at the facility level since only 30% of the facilities used information for monitoring, 40% of the facilities were having discussions about RHIS information, and 20% were making decisions after the discussions. Ten percent of the facilities showed promotional activities for using information, indicating that low level of senior management support to promote the use of information [22]. The post intervention showed that the level of information use has been increased from score 1.4 before to 2.7.

CHAPTER FIVE:

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

This project was conducted on the aim of improving data quality and information use of MCH department by assessing the weakness and strengths of HMIS performance and its major barriers grouped under M&E structures and capabilities, availability and use of data collection and reporting forms and tools, data management process and information use factors and come up with interventions intended to address the identified problems in the department.

The practical, strategic and simple interventional activities of this project on HMIS data quality and information use practice more or less increased the data management and reporting system ,the accuracy, completeness and timeliness of HMIS data reporting that paved the way for continuous information use in Dessie city Administration. The HMIS data quality and information use improvement intervention that involved specific on-job training, supportive supervisions, data audits as well as performance review meeting was found to be effective in increasing the data management and reporting, accuracy, completeness and timeliness of HMIS data leading to continuous information use for local action-oriented performance review.

The purpose of Health management Information system is to routinely produce better quality health information that provides specific information support to the decision-making process at each level of the health system for improving the performance of health services delivery and eventually leads to improved health status of the community served. However, in reality the situation was far from this in case of Dessie City Administration before interventional activities of this project. This was due to poor commitment from Zonal management for better quality HMIS data and local continuous information use, lack of due attention given to knowledge and skills for HMIS data processing, analyzing, interpretation and use, and poor supportive supervision for improving HMIS performance as some contributing factors for poor performance of HMIS in Dessie City Administration.

During improvement intervention of this project, awareness creation on concept, definition and purpose of HIS, HMIS and definition of data management and reporting systems as well as HMIS data quality and its relations with health program, decision making in the context of local performance improvement, and sustaining a culture of information use was given. Supportive supervisory visits, data audit and performance review meeting were carried out with active participation of HMIS performance improvement team and an encouraging result was achieved on HMIS performance.

5.2 Recommendations

Based on the findings of the project, the following recommendations were made to Dessie Zonal health office and all concerned stakeholders of HMIS.

- ❖ Regular supportive supervision and action-oriented feedback practice which focus on checking and ensuring HMIS data quality as well as use of HMIS information for identifying gaps, setting targets, making decision and provide feedback for internal management should be provided timely.
- ❖ The health facilities provide on-job training on data collection, analysis, interpretation, reporting and continuous use of information.
- ❖ The health facilities establish feedback mechanism between senior management and the departments.
- ❖ HMIS recording and reporting tools and one report system should be re-communicated to all stakeholders to avoid parallel reporting
- ❖ The health centers management should cascade the annual plan to the department and individual level and perform routine performance monitoring per the schedule according to the plan.
- ❖ The health centers should employ similar intervention mechanism for the other departments

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7. Annex

Part one

Participant Information Sheet

1. Information

Project Title: Improving data quality and information use in maternal and child health department in health centers in case of Dessie City Administration.

Affiliation: Addis Ababa University School of Information Science and School of Public Health

Background and Aims of the Study

This study examines the level of data quality problem and find out the factors contributing for the poor data quality problem in health centers. This study will be interviewing the health workers working on MCH department, head of health centers and HMIS focal persons who are directly or indirectly have contribution for the recording and reporting of MCH HMIS.

The objective of this project is to:

- 1.To do a baseline assessment on the level of data quality in relation to completeness, timeliness and accuracy; and information use of MCH departments at the health center levels ;in Dessie city Administration.
2. To identify possible factors affecting data quality and information use from health care providers perspective.
3. To design and implement an intervention and document the implementation processes.
4. To evaluate the progress and effect of the intervention on quality of data and information use.

What is required of me?

If you decide to be involved in this study you will be asked a number of questions that will take about 25 min of your time.

What is the procedure of the study?

The principal investigator will approach you at your working station to describe the purpose of study and obtain your consent for your voluntary participation. If you are selected for the study interview you will be interviewed by the principal investigator which takes about 25 minutes a system assessment protocol which includes 39 questions will be asked to you which you will give your answers on.

What are the possible benefits and risks of taking part?

Whilst there may be no personal benefits to your participation in this study, the information you provide can contribute to the future development of MCH Program. There is no any risk due to participating in this research.

Confidentiality

All information you provide to us will be kept confidential. Your name will not be written on the survey so there will be no possibility to identify you.

Contact person:

Shewaye Hailu Kechu (Principal Investigator) Tell: 0914-05-74-78

2. Consent Form

Title of the study “Improving data quality and information use of maternal and child health program in Health centers.”

I the participant, afterreading the information sheets or listing to someone reading agreed to participate in this study by understanding the study procedures and my participation rights listed below

1. I understand that the study involves semi structured in-depth interview, structured questioner and document review and if I am selected for the in-depth interview I will agree to participate in the study.

Yes

No

2. I understand that there will not be any risk and discomfort associated with this study and my data I provide will be kept confidential

Yes

No

3. I understand that I can withdraw from participating in this study at any time point during the study;

Yes

No

I hereby .Signed on this form to confirm my agreement to participate in this study

Participant's name: _____

Signature: _____ Date: _____ / _____ / _____

Investigator's name: _____

Signature: _____ Date: _____ / _____ / _____

Part two
Data Collection Tools
Protocol 1 - System's Assessment
LIST OF ALL QUESTIONS

	I - M&E Structure, Functions and Capabilities	Yes	partly	NO
1.	There are designated staff (HMIS focal person) responsible for reviewing aggregated numbers prior to submission to the next level (e.g., to districts, to regional offices, to the central M&E Unit).			
2.	The responsibility for recording the delivery of services on source documents is clearly assigned to the relevant staff.			
3.	All relevant staff have received training on the data management processes and tools.(80%)			
4.	All programs are integrated (including ART)			
5.	The service areas present or display charts/results that are up to date and accurate. (grade)			
6.	. The service delivery point establish performance monitoring team (as per standard)			
	II - Data-collection and Reporting Forms, Tools and guidelines			
1	. Service cards including tracer cards are available in adequate amounts (stock level of at least of 1 month).			
2.	Data collection tools (registers and tally sheets) are available in adequate amounts (stock level of at least of 1 month).			
3	The service delivery point is using standard reporting forms/tools.			
4.	The standard forms/tools are consistently used by the Service Delivery Site.			
5.	All <i>source documents</i> and <i>reporting forms</i> relevant for measuring the indicator(s) are available for auditing purposes.			
6.	The service delivery point uses additional "unofficial" forms, registers, tally or reports.			
7.	HMIS focal person knows the recording and reporting procedures			
8	The service delivery points receives regular supportive supervisory Visits			
9	HMIS focal person knows how to calculate indicators (e.g PMTCT completion rate, Deliveries attended by SBA, ANC 1st visit coverage, CAR, etc)			

	III- Data Management Processes			
1.	Individual folder ordered numerically			
2.	Use MPI card for indexing.			
3.	Check availability of duplicate MRN			
4.	Medical records are complete (Take 5 Individual folder and check in all visits)			
5.	MRs returned to MRU immediately after clients receive their service			
6.	Registers are promptly used upon service delivery			
7.	ALL Tally sheets are available and filled regularly			
8.	The HMIS focal person collects tally sheets on a regular basis			
9	All required reportable data elements are aggregated and filled monthly by HMIS focal person			
10	Data and medical charts are kept in a confidential			
11	LQAS is performed as per standard monthly and documented			
12	The service delivery point keeps copies of reports sent to WorHO/ZHD/RHB (check availability of at least one year report)			
13	The recording and reporting system avoids double counting people within and across Service Delivery Points (e.g., a person receiving the same service twice in a reporting period, a person registered as receiving the same service in two different locations.			
14	The reporting system enables the identification and recording of a "drop out", a person "lost to follow-up" and a person who died.			
	VI - Information Use			
1.	Performance monitoring team analyze report (plan vs achievement) on monthly basis			
2.	Action Plan is developed and documented for further follow up			
3.	Service Delivery point has discussion about RHIS, findings such as patient utilization, disease data, service coverage, or medicine stock out			
4	Does the office display information? Please indicate the types of data displayed and whether the data are updated for the last reporting period			

Part Three
Data Verification Protocol
Data Accuracy Check

	Indicators	NOVEMBER/2016			DECEMBER/2016		
		# from Registration book	# from Report	Accuracy %	# from Registrati on book	# from Report	ACCURCY %
1	<i>Number of women received Contraceptive</i>						
2	<i>Number of delivered women received postnatal care within 48 hours;</i>						
3	<i>Number of deliveries attended by skilled attendant;</i>						
4	<i>Number of infants vaccinated for penta3 immunization</i>						
5	<i>Number of HIV positive pregnant women received ART</i>						
6	<i>Number HIV-infected pregnant women received antiretroviral (ARV) prophylaxis</i>						
7	<i>Number of children treated for pneumonia</i>						
8	<i>Number of pregnant women received four or more ANC visits;</i>						

Part Four

Documentation Review:

	Review availability and completeness of all indicator source documents for the selected reporting period.		
	YES		NO
1	Review available source documents for the reporting period being verified. Is there any indication that source documents are missing?		
2.	Are all available source documents complete?		
3	Review the dates on the source documents. Do all dates fall within the reporting period?		

Part Five

Health Center Data Quality Assessment Dessie, Amhara Region

In-depth Interview Guide

Health center head, HMIS focal person and/or MCH head

Name and title of the person interviewed: _____

Discussion Points

- 1) When does this health center implement HMIS and start using it? Does it fulfill all the pre-requisites? **Probe:** shelf, computers, card room workers, formats and cards, MPI box, ...
- 2) How do you do client registration and retrieve cards of clients who came for ANC, delivery and PNC?
 - a. How do you do indexing? Using computer software or MPI card
 - b. Do you have history of missing cards of pregnant women? What do you do? explain
 - c. What challenges do you face in registration and retrieving cards?
- 3) Do you use the appropriate register for ANC, delivery, PMTCT and PNC services; and recording and reporting guidelines?
 - d. Do you have enough stock of these forms?
 - e. Do responsible staffs fill the registers correctly? What challenges do you face in filling these registers?
- 4) Do all the staffs including professionals in the MCH department received HMIS training? Probe: number of training days, content of training, on job or .was the training adequate? Do all the staffs know how to record and report?
- 5) Who compiled the report?
 - a. Is there assigned person? What is his profession? Does he/she have other responsibility?
 - b. What is the duration to compile the report from all departments?
 - c. How is it compiled (manually or electronically)? Explain the process

- 6) Do you check the quality of data? How frequent? Which department? What techniques are u using? What do you do with the result?
- 7) Does the health center received support on HMIS? From where?
- 8) Do you have performance monitoring team? Who are the team members? What is the responsibility of the team? Do u have regular meeting? Does data use and quality are agendas of the meeting?
- 9) Do you use data for planning and decision making? How? When? Do you display updated information?
- 10) How do you rate the quality of data and information use of this facility? In MCH department?
- 11) What do you think are the challenges/ factors that affect the quality of data and data use for service improvement?
- 12) How can we improve data quality and data use?
- 13) Do you have any additional comment or remark

Thank you for taking the time to conduct this interview!!

Annex Two

Action Plan

	identified weakness	Reasons for identified weakness or gaps	Possible solution	Responsible body	Time frame
1	Lack of training	Some of the staffs were new for the health centers and training was given 5 years back	Presentation of the project pre intervention results and discussion on the identified gaps for better solution with the project participants	PM	Three days
2	No functional PMT	Poor super vision and incomplete staff.	Complete the staff members and weekly/Monthly reviewing meetings.	PM	1 months
3	No internal supervisory checklist for HMIS Performance Improvement	Weak supportive supervision and feedback mechanism	Developing supervisory checklist for HMIS Performance Improvement and integrate it in to regular process	Health centers management	Recommendation
4	Over/under reporting	Weak supportive supervision and feedback mechanism on data quality	supportive supervision Data Audit	HMIS Performance Improvement team	One month
5	Weak culture of information use	-Limited understanding on the determinants of poor performance -Emphasis on data quality - promote use of table, chart or graphic tools on core indicators for data display	-Evidence based decision making, -promote through the regular PMT monthly meeting -use of table, chart or graphic tools on core indicators at MCH, Health center Head office &HMIS room	PM	One month

Activities expected during presentation session

SN	Areas of discussion	Objectives	Activities	Responsible body
1	Welcome to the participants and Introduction topics	During presentation the PM will be able to: -Explain the objectives of the project	Discussion	PM
2	Definitions and purposes of HIS and HMIS for performance management	- Understand and explain about reports generated by HMIS, about HMIS indicators and their importance and about the types of indicators used for information use at each level of the health system.	-Group discussion -Brief lecture	PM and PM participants
3	HMIS data management and reporting systems	-Define data management and reporting systems - Explain Functional components of data management systems using DQA frame work.	Discussion	PM participants
4	HMIS Data Quality	-Define data quality -Describe data quality dimension	-Exercise how to check data accuracy or computation, completeness and recording and reporting procedures.	PM Participants
5	Sustaining Culture of Information Use	Define culture of information use. Describe the factors affecting culture of information use. Develop action for sustaining the culture of information use	Discuss on sustaining culture of HMIS information use.	PM Participants